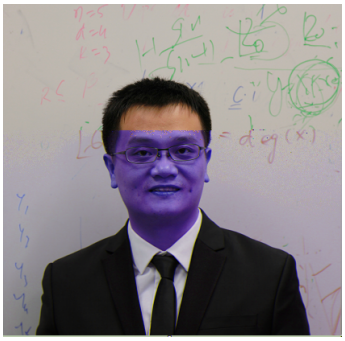
# Dr. Fan Cheng



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## Education

2008–2012 Ph.D., Information Engineering
The Chinese University of Hong Kong, China
Thesis title: Performance Bounds in Secure Network Coding
Advisor: Prof. Raymond W. Yeung

2003–2007 B.S., Computer Science and Engineering
Shanghai Jiao Tong University, China
ACM Honored Class, 2003–2006

2000–2003 Provincial Science Experimental Class of Hubei
Wugang No. 3 Middle School, Wuhan City, Hubei Province, China

## Research Interests

Information Theory, Cryptography, Networking, Machine Learning, Mathematical Physics

## Honors and Awards

Class I Prize, National Mathematics Competition, China, 2001

## Teaching

### Teaching Assistant, The Chinese University of Hong Kong, 2008–2012

IERG4180 Network Software Design and Programming
IERG2810 Digital Systems Design Laboratory
IERG5154 Information Theory
ENGG2013 Advanced Engineering Maths

## Job Experience

| | |
|---|---|
| Mar. 2016 – July 2016 | Postdoctoral Fellow<br>Department of Information Engineering<br>The Chinese University of Hong Kong |
| Research area: | Information Theory |
| Jan. 2015 – Mar. 2016 | Research Fellow<br>Department of Electrical and Computer Engineering<br>National University of Singapore, Singapore |
| Research areas: | Information Theory, Machine Learning |
| Aug. 2012 – Dec. 2014 | Postdoctoral Fellow<br>Institute of Network Coding<br>The Chinese University of Hong Kong |
| Research areas: | Information Theory, Network Coding |
| Jul. 2011 – Nov. 2011 | Student Intern<br>AT&T Labs - Research<br>Florham Park, NJ 07932, USA |
| Research area: | Distributed Storage |
| Sep. 2005 – Jul. 2007 | Student Intern<br>BCMI Lab<br>Department of Computer Science and Engineering<br>Shanghai Jiao Tong University, China |
| Research areas: | Face Detection, Gender Recognition |
| Jul. 2005 – Sep. 2005 | Student Intern<br>Star of Tomorrow Program<br>Incubation Group<br>Microsoft Research Asia, Beijing, China |
| Research areas: | Text Classification, Data Mining |

## Professional activities

### Reviewer

IEEE Transactions on Information Theory
IEEE International Symposium on Information Theory
IEEE Information Theory Workshop
IEEE International Symposium on Network Coding
IEEE Communications Letters
IEEE Conference on Decision and Control
IEEE/ACM Transactions on Networking
Security and Communication Networks
Physica A: Statistical Mechanics and its Applications

### Conference Organization

1. Organizer, First Workshop on Entropy and Information Inequalities, The Chinese University of Hong Kong, April 15–17, 2013.

### Invited Talks

1. F. Cheng, "Some Progress on the Wiretap Network with Arbitrary Wiretap Sets," Department of Electrical and Computer Engineering, National University of Singapore, Singapore, February 11, 2015.

2. F. Cheng, "Information Inequality and Wiretap Network," School of Information Science and Technology, Shanghaitech University, Shanghai, April 13, 2015.

3. F. Cheng, "A Numerical Study on the Wiretap Network with a Simple Network Topology," Mathematical Tools of Information-Theoretic Security Workshop, Huawei Mathematical and Algorithmic Sciences Lab, Paris, France, September 23–25, 2015.

4. F. Cheng, "Beyond Shannon EPI: A Completely Monotone Conjecture," Nexus of Information and Computation Theories, IHP Spring 2016 Thematic Program – Fundamental Inequalities and Lower Bounds Theme, The Henri Poincare Institute (IHP), France, February 15–26, 2016.

5. F. Cheng, "Information Theory and Its Application," Department of Computer Science and Engineering, Shanghai Jiao Tong University, Shanghai, April 6, 2016.

## Publications

### Journal Papers

1. F. Cheng and V. Y. F. Tan, "A Numerical Study on the Wiretap Network with a Simple Network Topology," *IEEE Trans. Inform. Theory*, vol. 62, no. 5, pp. 2481-2492, May 2016.

2. F. Cheng and Y. Geng, "Higher Order Derivatives in Costa's Entropy Power Inequality," *IEEE Trans. Inform. Theory*, vol. 61, no. 11, pp. 5892-5905, Nov. 2015.

3. F. Cheng, R. W. Yeung, and K. W. Shum, "Imperfect Secrecy in Wiretap Channel II," *IEEE Trans. Inform. Theory*, vol. 61, no. 1, pp. 628-636, Jan. 2015.

4. F. Cheng and R. W. Yeung, "Performance Bounds on a Wiretap Network with Arbitrary Wiretap Sets," *IEEE Trans. Inform. Theory*, vol. 60, no. 6, pp. 3345-3358, Jun. 2014.

5. F. Cheng, "Generalization of Mrs. Gerber's Lemma," *Communications in Information and Systems*, vol. 14, no. 2, pp. 79-86, 2014.

6. R. K. Panta, R. Jana, F. Cheng, Y.-F. R. Chen, and V. A. Vaishampayan, "Phoenix: Storage Using an Autonomous Mobile Infrastructure," *IEEE Transactions on Parallel and Distributed Systems*, vol. 24, no. 9, pp. 1863-1873, Sept. 2013.

7. T. Wu and F. Cheng, "The Structures of Zero-divisor Semigroups with Graph $K_n \circ K_2$," *Semigroup Forum*, vol. 76, Springer (2008), pp. 330-340.

### Conference Papers

1. Y. Geng and F. Cheng, "Duality between finite numbers of discrete multiple access and broadcast channels," *2015 IEEE Information Theory Workshop*, Jeju, Korea (ITW 2015).
2. Q. Chen, F. Cheng, T. Liu and R. W. Yeung, "A Marginal Characterization of Entropy Functions for Conditional Mutual Independent Random Variables," *2015 IEEE International Symposium on Information Theory*, (ISIT 2015).
3. F. Cheng, "Optimality of Routing on the Wiretap Network with Simple Network Topology," *2014 IEEE International Symposium on Information Theory*, (ISIT 2014).
4. F. Cheng and Y. Geng, "Convexity of Fisher Information with Respect to Gaussian Perturbation," *2014 Iran Workshop on Communication and Information Theory*, (IWCIT 2014).
5. F. Cheng, R. W. Yeung and K. W. Shum, "Imperfect Secrecy in Wiretap Channel II," *2012 IEEE International Symposium on Information Theory*, (ISIT 2012).
6. F. Cheng and R. W. Yeung, "Performance Bounds in Secure Network Coding," *2011 IEEE International Symposium on Network Coding*, (NetCod 2011).

## Referees

1. Prof. Raymond Yeung, IE and INC, CUHK (Thesis Supervisor)
2. Prof. Venkat Anantharam, EECS, UC Berkeley
3. Prof. Babak Hassibi, EE, Caltech
4. Prof. Chandra Nair, IE, CUHK
5. Prof. Sid Jaggi, IE, CUHK
6. Dr. Yih-Farn Robin Chen, AT&T Labs - Research
7. Prof. Tie Liu, ECE, TAMU
8. Prof. Vincent Tan, ECE, NUS